

Appendix V-3

The Timberlake Dam Failure

Timberlake Dam Failure

Tragedy struck in Southwest Virginia between June 22nd and June 23rd, 1995, after an unusually large early summer rainfall. Beginning at 4:00 PM Eastern Daylight Time on the 22nd, and ending at 11:00 PM that day, portions of southwest Virginia received 22.1 cm of rain. This rainfall surpassed the 100 year event total of 19.8 cm. It was later found through radar estimates, that the Timberlake basin received in excess of 28 cm. of rain. This excessive rainfall event caused the failure of the Timberlake dam at 10:30 PM on the 22nd, releasing 2 million m³ of water.

This rain storm was caused by a chance meteorological event which combined a closed low pressure system over the north Carolina-Tennessee border, and a weak surface trough that extended from eastern Ohio across southwestern Virginia. This situation resulted in the forcing of moisture rich air upslope into the Appalachian Mountains. On the microphysical scale, this storm was very similar to flash flood events previously observed in the United States. When a storm system has deep and warm cloud layers, it can be extra conducive to producing heavy rainfall. A large flash flood in Cheyenne, Wyoming had a warm cloud depth of 3 km, and observations from the time of the Timberlake basin flooding event showed warm cloud depths ranging from 3 to 4.3 km.

The failure of the Timberlake Dam caused two fatalities, and damage to local roads and residences. Rescue worker Carter Martin was trying to assist motorists stranded on a bridge over Buffalo Creek between Bedford and Campbell counties. The water level rose more than 4 feet almost instantly, overcoming Martin. The second fatality involved Doris Stanley, who was driving home to Forest, Virginia from Richmond. She never made it home however, as her car was washed away by the rising flood water.

VDOT reported that Virginia 683 was washed out in three places, but most other roads were not severely damaged. Three homes along Troublesome Creek near Evington, Virginia suffered extensive damage, which included crumpled sheds and other out structures, as well as the destruction of gardens. Twenty-nine cats were also swept away from a wood pile on a property along the creek. Workers at the Georgia Pacific's Big Island paper mill had to scramble to save equipment as rising waters encroached on the plant. Otherwise, most businesses in the flooded areas suffered only low to moderate damage.

The dam failure was controversial because the dam was known to not to be up to modern codes. However, it was grandfathered in and only required spillway inspection once a year. A professor at Radford University blamed the flooding on the dramatic increase in impervious surfaces in the Timberlake basin caused by human development. These factors, in combination with the fact that the meteorological event surpassed the 100 year storm rainfall parameters, and would have been extremely difficult to predict, all contribute to the explanation of how the communities and persons affected were caught off guard by the dam failure.

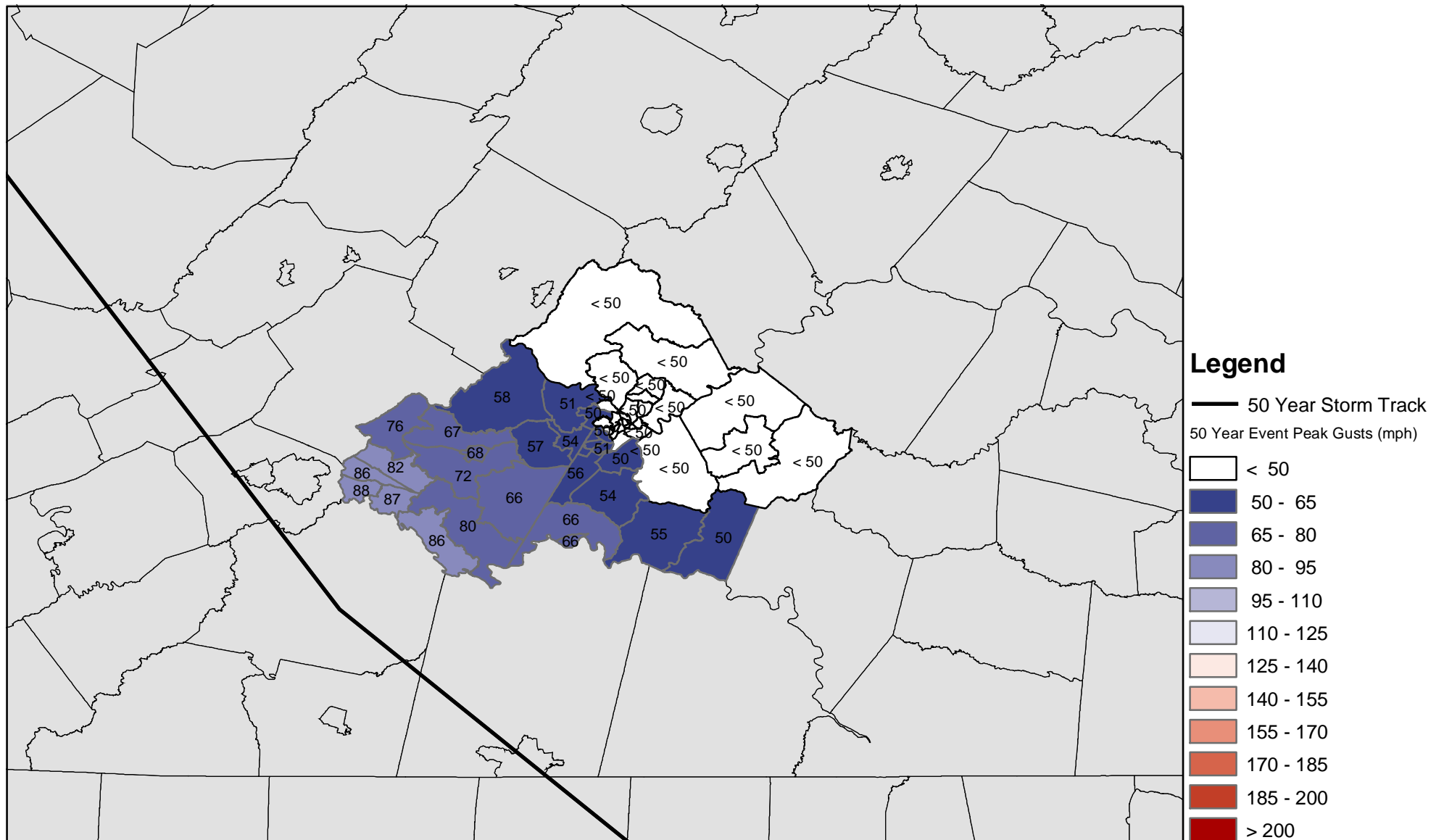
Appendix V-4

HAZUS-MH Wind Speed Maps

1. Probabilistic 50 Year Hurricane Event
2. Probabilistic 100 Year Hurricane Event
3. Probabilistic 1,000 Year Hurricane Event

Region 2000

Probabilistic 50 Year Hurricane Event

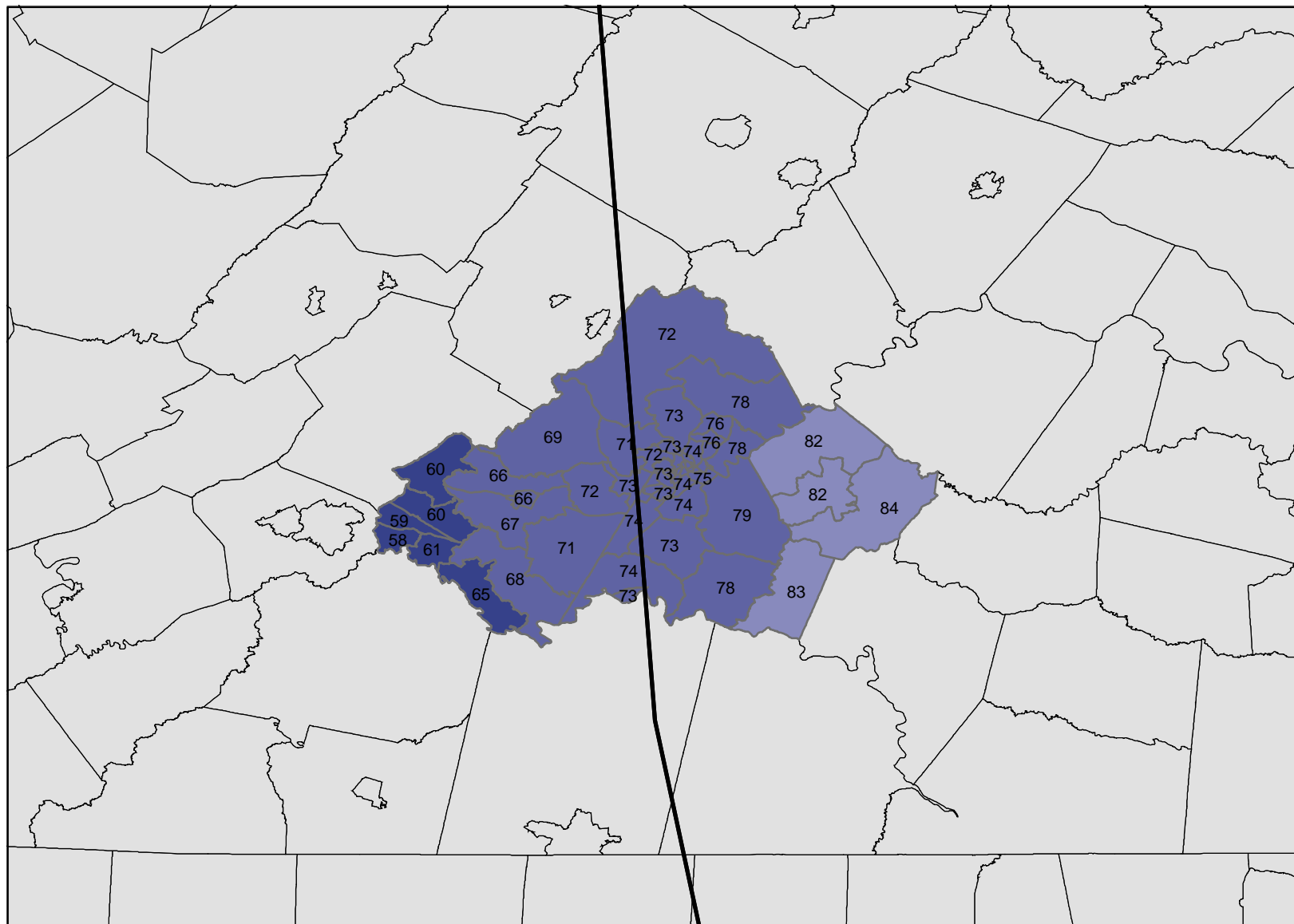


50 25 0 50 Miles



Region 2000

Probabilistic 100 Year Hurricane Event



Legend

— 100 Year Storm Track

100 Year Event Peak Gusts (mph)

< 50

50 - 65

65 - 80

80 - 95

95 - 110

110 - 125

125 - 140

140 - 155

155 - 170

170 - 185

185 - 200

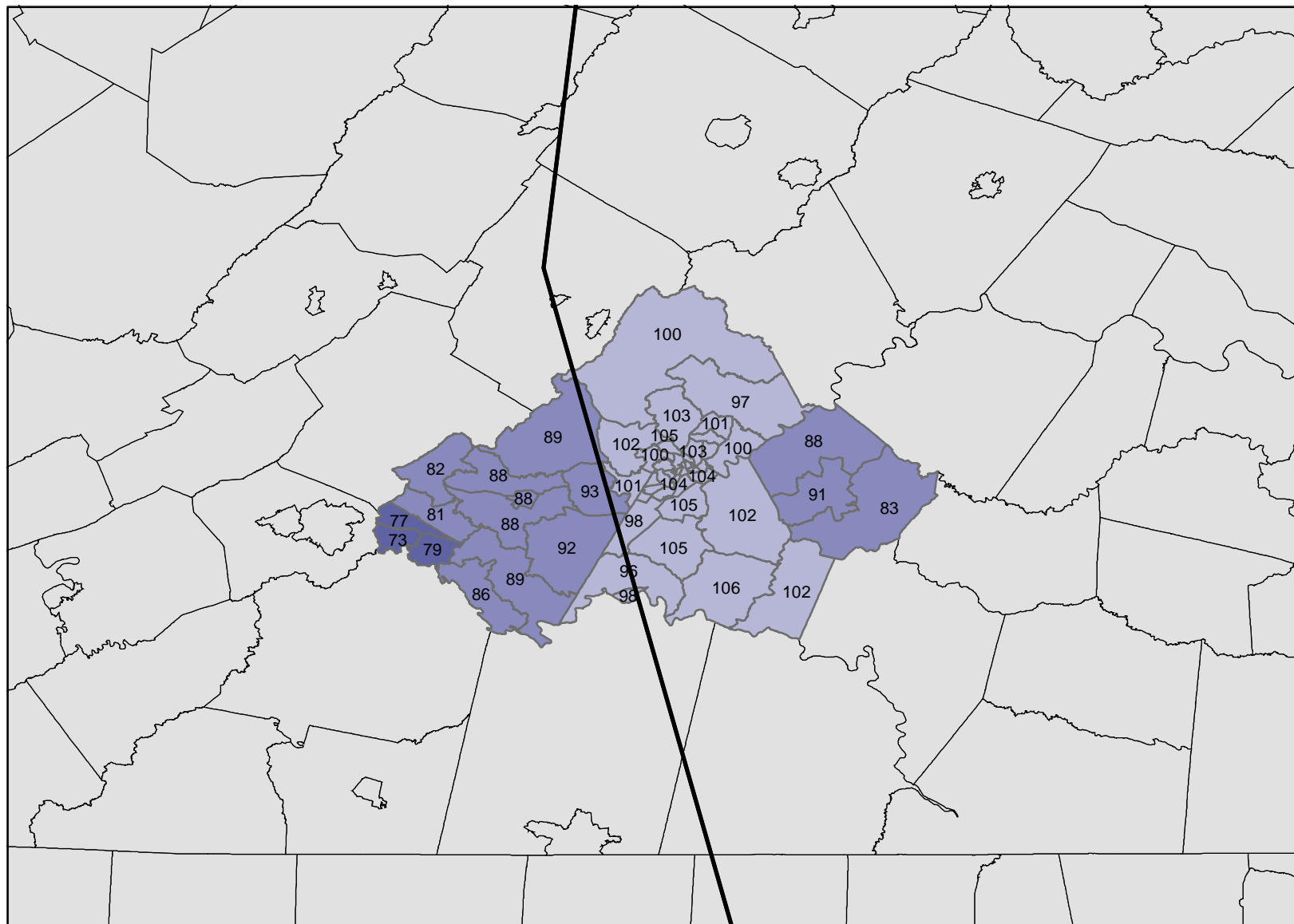
> 200

40 20 0 40 Miles



Region 2000

Probabilistic 1000 Year Hurricane Event



Legend

— 1000 Year Storm Track

1000 Year Event Peak Gusts (mph)

< 50

50 - 65

65 - 80

80 - 95

95 - 110

110 - 125

125 - 140

140 - 155

155 - 170

170 - 185

185 - 200

> 200

40 20 0 40 Miles

